

REMARKS

In the Outstanding Office Action mailed on 16-Feb-2007, the Examiner had noted that the rejection of the claims based on US Patent Number 4,152,202 issued to DeLigt (hereafter DeLigt) was not treated in the previous response filed on 07-Dec-06. However, it is believed that the correct previous response filed date is 28-Nov-2006, and the present response is submitted based on this belief.

Applicants and the undersigned representative first wish to thank the Examiner for providing the opportunity to submit the present supplemental response.

It is Applicant's position that DeLigt does not teach or reasonably suggest various features of previously presented independent claim 21. For example, independent claim 21 recites:

A system for controlling one or more properties of a sheet of material to be manufactured on a sheet-making machine comprising:

a plurality of actuators distributed in the cross-machine direction over said sheet of material, ***each actuator being operable to perform a first control action with a magnitude on a slice of said sheet of material, the actuator also being operable to perform a second control action to manipulate a cross-directional shape within said slice***, each of said plurality of actuators being controllable to vary the properties of said sheet of material by ***varying both said magnitude and said cross-directional shape within said slice***;

scanners distributed over said sheet of material to measure properties data about the properties of said sheet of material; and

a controller in communication with said scanners for calculating said first control action and said second control action for each of said plurality of actuators, and implementing said first control action and said second control action at each of said plurality of actuators such that said actuators co-operate to adjust the properties of said sheet of material to desired targets.

(Previously presented independent claim 1, ***Emphasis Added***)

Thus an approach according to currently amended claim 21 relates to a situation where a system for controlling the properties of a sheet of material is provided with a number of actuators where each of the actuator has the ability to perform a control action with a magnitude on a slice of the sheet, and also to perform another control action to manipulate the cross-direction shape of the actuator within the slice.

Variation between measured properties and desired targets are minimized by manipulating both the magnitude and the cross-directional shape of each actuator based on communications with a scanner, which measures properties of the sheet of material.

5 DeLigt does not disclose or reasonably suggest such features. In support of such a position, Applicants point to some of the portions of DeLigt:

10 It is, therefore, an objective of the present invention to teach the construction of a web profile correction system having an adequate degree of flow regulation accomplished with the simplicity of a binary command system. Another object of the present invention is to teach a web profile corrective spray system ***having a variable flow rate*** without affecting the spray impact velocity or fan width.

15 Another object of the present invention is to teach the construction of a spray system for web profile correction wherein each spray station across the web CD is serviced by three binary command flow valves activating different capacity spray nozzles to achieve ***eight distinct flow rates*** over the full flow control range. (Col. 3, Lines 55-68 of DeLigt, ***Emphasis Added***)

At least from the above, it is concluded that DeLigt teaches having the ability to have multiple (eight) flow rates. This features corresponds to only having the ability to vary the magnitude within a slice.

20 There is no teaching or suggestion in DeLigt to vary the claimed cross-directional shape within a slice, in addition to the noted magnitude.

25 Indeed, based at least on the below teachings, it is concluded that DeLigt teaches away from such a feature by suggesting either to keep some characteristics of nozzles constant or to pre-determine (i.e., prior to the start of manufacturing of a sheet of material) the characteristics:

30 It is, therefore, an objective of the present invention to teach the construction of a web profile correction system having an adequate degree of flow regulation accomplished with the simplicity of a binary command system. Another object of the present invention is to teach a web profile corrective spray system having a variable flow rate ***without affecting the spray impact velocity or fan width***. (Col. 3, Lines 55-62 of DeLigt, ***Emphasis Added***)

35 Downstream of each valve 31, 32 and 33 are spray nozzles 35, 36 and 37, respectively. ***These nozzles*** emit a fan-spray pattern and ***are positioned above the plane of the fourdrinier pond at a height which corresponds to the angular spread of the spray fan and the desired impact velocity***. The angular spread of the spray fan is also determinative of lateral spacing between CD adjacent spray stations, ***the***

spacing being such to provide an approximately one-half inch overlap of adjacent spray fans.

In the machine direction (MD), measured parallel with the running direction of the fourdrinier screen 12, ***the nozzles 35, 36 and 37 are angularly separated about the "Y" axis by approximately 10.degree.*** This arrangement places the discharge jet axis of nozzle 35 at approximately 70.degree., nozzle 36 to 60.degree. and nozzle 37 at 50.degree. of the table plane 14.

Axis "Y" is normally located approximately 1.5 to 4 feet down the table plane 14 from the slice 11 and represents the line of impact along which the jets of all nozzles will collide with the traveling fourdrinier pond 30.

On some stock, basis weight and machine combinations, however, the effective MD location range for positioning the "Y" axis may be extended substantially to accommodate other machine equipment in the immediate proximity of the slice. At least one instance has proven an effective location for the impact line at 6 feet down from the slice landing. More subjectively, the impact line must be located within the pond zone of the fourdrinier where the individual stock fibers are still sufficiently fluid and mobile as to tolerate displacement by the spray impact and subsequently reverse flow to level and smooth the boundaries of the channeled swath following the spray before such fibers are positionally set at the "dry line" end of the pond. This state of conditions more generally determinative of the impact line MD location is characterized as the fiber mobile zone of the pond.

For optimum flexibility as to total flow rate increment spacing, nozzles 35, 36 and 37 should be selected with different orifice sizes to issue relatively proportional flow rates and spray fan width under the same pressure drive. A representative orifice size distribution among three nozzles under a 40 psi manifold pressure may be, for example, 1 gpm for nozzle 35, 2 gpm for nozzle 36 and 4 gpm for nozzle 37, the proportionality being:
(Col. 4 line 67 to Col. 5 line 45 of DeLigt, ***Emphasis Added***)

From the above, it is concluded that DeLigt does not teach or reasonably suggest several features of previously presented claim 21. Accordingly, claim 21 is allowable over the art of record.

Claims 22-25, 34 and 35 (as well as withdrawn claims 26-33) are allowable at least as depending from the allowable base claim 21.

Newly added claim 34 is allowable independently over DeLigt in reciting that each actuator is individually operable to perform the first and second control actions noted above. Such individual control may provide enhanced precision in the fabrication process. In particular, at least for reasons noted above, it is asserted that there is no suggestion of a

second control action in DeLigt. Newly added claim 35 is also believed to be independently allowable over DeLigt for similar reasons as well.

5 All the rejections and objections are thus believed to have been overcome.
Withdrawal of the outstanding objections and rejections, and continuation of examination is respectfully requested. The Examiner is invited to telephone Mr. Anthony Miologos at 602-313-5683 if it is believed that an interview might be useful for any reason.

Respectfully submitted,

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Signature

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